

## G. SEQUENCE LISTING

- 5 (1) GENERAL INFORMATION
- (i) APPLICANT: Darrell Anderson, Nabil Hanna, John Leonard,  
Roland Newman and Mitchell Reff and William H.  
Rastetter
- 10 (ii) TITLE OF INVENTION: THERAPEUTIC APPLICATION OF  
CHIMERIC AND RADIOLABELED  
ANTIBODIES TO HUMAN B  
LYMPHOCYTE RESTRICTED  
15 DIFFERENTIATION ANTIGEN FOR  
TREATMENT OF B CELL LYMPHOMA
- (iii) NUMBER OF SEQUENCES: 8
- 20 (iv) CORRESPONDING ADDRESS:
- (A) ADDRESSEE: IDEC Pharmaceuticals Corporation  
(B) STREET: 11011 Torreyana Road  
(C) CITY: San Diego  
25 (D) STATE: California  
(E) COUNTRY: USA  
(F) ZIP: 92121
- (v) COMPUTER READABLE FORM:
- 30 (A) MEDIUM TYPE: Diskette, 3.5 inch, 1.44 Mb  
(B) COMPUTER: Macintosh  
(C) OPERATING SYSTEM: MS.DOS  
35 (D) SOFTWARE: Microsoft Word 5.0
- (vi) CURRENT APPLICATION DATA:
- (A) APPLICATION NUMBER:  
(B) FILING DATE:  
40 (C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
- 45 (A) NAME: Burgoon, Richard P. Jr.  
(B) REGISTRATION NUMBER: 34,787  
(C) REFERENCE/DOCKET NUMBER:
- (ix) TELECOMMUNICATION INFORMATION:
- 50 (A) TELEPHONE: (619) 550-8500  
(B) TELEFAX: (619) 550-8750

(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8540 bases  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: yes

(iv) ANTI-SENSE: no

(ix) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

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GACGTCGCGG CCGCTCTAGG CCTCCAAAAA AGCCTCCTCA CTACTTCTGG AATAGCTCAG 60  
AGGCCGAGGC GGCCTCGGCC TCTGCATAAA TAAAAAAAAT TAGTCAGCCA TGCATGGGGC 120  
GGAGAATGGG CGGAAGTGGG CGGAGTTAGG GCGGGGATGG GCGGAGTTAG GGGCGGGACT 180  
ATGGTTGCTG ACTAATTGAG ATGCATGCTT TGCATACTTC TGCCTGCTGG GGAGCCTGGG 240  
GACTTTCCAC ACCTGGTTGC TGAATAATTG AGATGCATGC TTTGCATACT TCTGCCTGCT 300  
GGGGAGCCTG GGGACTTTCC ACACCCTAAC TGACACACAT TCCACAGAAT TAATTCCCCT 360  
AGTTATTAAT AGTAATCAAT TACGGGGTCA TTAGTTCATA GCCCATATAT GGAGTTCGCG 420  
GTTACATAAC TTACGGTAAA TGGCCCGCCT GGCTGACCGC CCAACGACCC CCGCCCATTG 480  
ACGTCAATAA TGACGTATGT TCCCATAGTA ACGCCAATAG GGAAGTTCCA TTGACGTCAA 540  
TGGGTGGACT ATTTACGGTA AACTGCCCCAC TTGGCAGTAC ATCAAGTGTA TCATATGCCA 600  
AGTACGCCCC CTATTGACGT CAATGACGGT AAATGGCCCG CCTGGCATTG TGCCAGTAC 660  
ATGACCTTAT GGGACTTTCC TACTTGGCAG TACATCTACG TATTAGTCAT CGCTATTACC 720  
ATGGTGATGC GGTTTTGGCA GTACATCAAT GGGCGTGGAT AGCGGTTTGA CTCACGGGGA 780  
TTTCCAAGTC TCCACCCCAT TGACGTCAAT GGGAGTTTGT TTTGGACCA AAATCAACGG 840  
GACTTTCCAA AATGTCGTAA CAACTCCGCC CCATTGACGC AAATGGGCGG TAGGCGTGTA 900  
CGGTGGGAGG TCTATATAAG CAGAGCTGGG TACGTGAACC GTCAGATCGC CTGGAGACGC 960  
CATCACAGAT CTCTACCAT GAGGGTCCCC GCTCAGCTCC TGGGGCTCCT GCTGCTCTGG 1020  
CTCCAGGTG CACGATGTGA TGGTACCAAG GTGGAATCA AACGTACGGT GGCTGCACCA 1080  
TCTGTCTTCA TCTTCCCGCC ATCTGATGAG CAGTTGAAAT CTGGAAGTGC CTCTGTTGTG 1140  
TGCCTGCTGA ATAATTCTA TCCCAGAGAG GCCAAAGTAC AGTGAAGGT GGATAACGCC 1200  
CTCCAATCGG GTAATCCCA GGAGAGTGTC ACAGAGCAGG ACAGCAAGGA CAGCACCTAC 1260

|    |                                                                    |      |
|----|--------------------------------------------------------------------|------|
|    | AGCCTCAGCA GCACCTGAC GCTGAGCAAA GCAGACTACG AGAAACACAA AGTCTACGCC   | 1320 |
|    | TGCGAAGTCA CCCATCAGGG CCTGAGCTCG CCCGTCACAA AGAGCTTCAA CAGGGGAGAG  | 1380 |
| 5  | TGTTGAATTC AGATCCGTTA ACGGTTACCA ACTACCTAGA CTGGATTTCGT GACAACATGC | 1440 |
|    | GGCCGTGATA TCTACGTATG ATCAGCCTCG ACTGTGCCTT CTAGTTGCCA GCCATCTGTT  | 1500 |
| 10 | GTTTGCCCCCT CCCCCGTGCC TTCCTTGACC CTGGAAGGTG CCACTCCCAC TGTCTTTCC  | 1560 |
|    | TAATAAAATG AGGAAATTGC ATCGCATTGT CTGAGTAGGT GTCATTCTAT TCTGGGGGGT  | 1620 |
|    | GGGGTGGGGC AGGACAGCAA GGGGGAGGAT TGGGAAGACA ATAGCAGGCA TGCTGGGGAT  | 1680 |
| 15 | GCGGTGGGCT CTATGGAACC AGCTGGGGCT CGACAGCTAT GCCAAGTACG CCCCCTATTG  | 1740 |
|    | ACGTCAATGA CGGTAAATGG CCCGCTGGC ATTATGCCCA GTACATGACC TTATGGGACT   | 1800 |
| 20 | TTCCTACTTG GCAGTACATC TACGTATTAG TCATCGCTAT TACCATGGTG ATGCGGTTTT  | 1860 |
|    | GGCAGTACAT CAATGGGCGT GGATAGCGGT TTGACTCACG GGGATTTCCA AGTCTCCACC  | 1920 |
|    | CCATTGACGT CAATGGGAGT TTGTTTTGGC ACCAAAATCA ACGGGACTTT CCAAAATGTC  | 1980 |
| 25 | GTAACAATC CGCCCCATTG ACGCAAATGG GCGGTAGGCG TGTACGGTGG GAGGTCTATA   | 2040 |
|    | TAAGCAGAGC TGGGTACGTC CTCACATTCA GTGATCAGCA CTGAACACAG ACCCGTCGAC  | 2100 |
| 30 | ATGGGTTGGA GCCTCATCTT GCTCTTCCTT GTCGCTGTTG CTACGCGTGT CGCTAGCACC  | 2160 |
|    | AAGGGCCCAT CGGTCTTCCC CCTGGCACCC TCCTCCAAGA GCACCTCTGG GGGCACAGCG  | 2220 |
|    | GCCCTGGGCT GCCTGGTCAA GGACTACTTC CCCGAACCGG TGACGGTGTC GTGGAATCA   | 2280 |
| 35 | GGCGCCCTGA CCAGCGGCGT GCACACCTTC CCGGCTGTCC TACAGTCCTC AGGACTCTAC  | 2340 |
|    | TCCCTCAGCA GCGTGGTGAC CGTGCCCTCC AGCAGCTTGG GCACCCAGAC CTACATCTGC  | 2400 |
| 40 | AACGTGAATC ACAAGCCCAG CAACACCAAG GTGGACAAGA AAGCAGAGCC CAAATCTTGT  | 2460 |
|    | GACAAAATC ACACATGCCC ACCGTGCCCA GCACCTGAAC TCCTGGGGGG ACCGTCAGTC   | 2520 |
|    | TTCCTCTTCC CCCCCAAACC CAAGGACACC CTCATGATCT CCCGGACCCC TGAGGTCACA  | 2580 |
| 45 | TGCGTGGTGG TGGACGTGAG CCACGAAGAC CCTGAGGTCA AGTTCAACTG GTACGTGGAC  | 2640 |
|    | GGCGTGGAGG TGCATAATGC CAAGACAAAG CCGCGGGAGG AGCAGTACAA CAGCACGTAC  | 2700 |
| 50 | CGTGTGGTCA GCGTCCTCAC CGTCCTGCAC CAGGACTGGC TGAATGGCAA GGAGTACAAG  | 2760 |
|    | TGCAAGGTCT CCAACAAAGC CCTCCCAGCC CCCATCGAGA AAACCATCTC CAAAGCCAAA  | 2820 |
|    | GGGCAGCCCC GAGAACCACA GGTGTACACC CTGCCCCCAT CCCGGGATGA GCTGACCAAG  | 2880 |
| 55 | AACCAGGTCA GCCTGACCTG CCTGGTCAAA GGCTTCTATC CCAGCGACAT CGCCGTGGAG  | 2940 |
|    | TGGGAGAGCA ATGGGCAGCC GGAGAACAAC TACAAGACCA CGCCTCCCGT GCTGGACTCC  | 3000 |
| 60 | GACGGCTCCT TCTTCTCTA CAGCAAGCTC ACCGTGGACA AGAGCAGGTG GCAGCAGGGG   | 3060 |
|    | AACGTCTTCT CATGCTCCGT GATGCATGAG GCTCTGCACA ACCACTACAC GCAGAAGAGC  | 3120 |
|    | CTCTCCCTGT CTCCGGGTAA ATGAGGATCC GTTAACGGTT ACCAACTACC TAGACTGGAT  | 3180 |

|    |            |            |            |            |            |            |            |            |      |
|----|------------|------------|------------|------------|------------|------------|------------|------------|------|
|    | TCGTGACAAC | ATGCGGCCGT | GATATCTACG | TATGATCAGC | CTCGACTGTG | CCTTCTAGTT | 3240       |            |      |
| 5  | GCCAGCCATC | TGTTGTTTGC | CCCTCCCCCG | TGCCTTCCTT | GACCCTGGAA | GGTGCCACTC | 3300       |            |      |
|    | CCACTGTCCT | TTCTAATAA  | AATGAGGAAA | TTGCATCGCA | TTGTCTGAGT | AGGTGTCATT | 3360       |            |      |
| 10 | GGCATGCTGG | GGATGCGGTG | GGCTCTATGG | AACCAGCTGG | GGCTCGACAG | CGCTGGATCT | 3480       |            |      |
|    | CCC        | GAT        | CCCC       | AGCTTTGCTT | CTCAATTCT  | TATTTGCATA | ATGAGAAAAA | AAGGAAAATT | 3540 |
| 15 | AATTTTAACA | CCAATTCAGT | AGTTGATTGA | GCAAATGCGT | TGCCAAAAAG | GATGCTTTAG | 3600       |            |      |
|    | AGACAGTGTT | CTCTGCACAG | ATAAGGACAA | ACATTATTCA | GAGGGAGTAC | CCAGAGCTGA | 3660       |            |      |
|    | GA         | CTCCTAAG   | CCAGTGAGTG | GCACAGCATT | CTAGGGAGAA | ATATGCTTGT | CATCACC    | GAA        | 3720 |
| 20 | GCCTGATTCC | G          | TAGAGCCAC  | ACCTTGGTAA | GGGCCAATCT | GCTCACACAG | GATAGAGAGG | 3780       |      |
|    | GCAGGAGCCA | GGG        | CAGAGCA    | TATAAGGTGA | GGTAGGATCA | GTTGCTCCTC | ACATTTGCTT | 3840       |      |
| 25 | CTGACATAGT | TGTGTTGGGA | GCTTGGATAG | CTTGGACAGC | TCAGGGCTGC | GATTTGCGCG | 3900       |            |      |
|    | CAA        | ACTTGAC    | GGCAATCCTA | GCGTGAAGGC | TGGTAGGATT | TTATCCCCGC | TGCCATCATG | 3960       |      |
|    | GTT        | CGACCAT    | TGA        | ACTGCAT    | CGTCGCCGTG | TCCCAAAATA | TGGGGATTGG | CAAGAACGGA | 4020 |
| 30 | GACCTACCCT | GGCCTCCGCT | CAGGAACGAG | TTCAAGTACT | TCCAAGAAT  | GACCACAACC | 4080       |            |      |
|    | TCTTCAGTGG | AAGGTAAACA | GAATCTGGTG | ATTATGGGTA | GGAAAACCTG | GTTCTCCATT | 4140       |            |      |
| 35 | CCTGAGAAGA | ATCGACCTTT | AAAGGACAGA | ATTAATATAG | TTCTCAGTAG | AGAACTCAA  | 4200       |            |      |
|    | GA         | ACCACCAC   | GAGGAGCTCA | TTTTCTTGCC | AAAAGTTTGG | ATGATGCCTT | AAGACTTATT | 4260       |      |
|    | GA         | ACAACCGG   | AATTGGCAAG | TAAAGTAGAC | ATGGTTTGGA | TAGTCGGAGG | CAGTTCTGTT | 4320       |      |
| 40 | TACCAGGAAG | CCATGAATCA | ACCAGGCCAC | CTTAGACTCT | TTGTGACAAG | GATCATGCAG | 4380       |            |      |
|    | GA         | ATTTGAAA   | GTGACACGTT | TTTCCCAGAA | ATTGATTTGG | GGAAATATAA | ACTTCTCCCA | 4440       |      |
| 45 | GAATACCCAG | GCGTCCTCTC | TGAGGTCCAG | GAGGAAAAAG | GCATCAAGTA | TAAGTTTGAA | 4500       |            |      |
|    | GTCTACGAGA | AGAAAGACTA | ACAGGAAGAT | GCTTTCAAGT | TCTCTGCTCC | CCTCCTAAAG | 4560       |            |      |
|    | CTATGCATTT | TTATAAGACC | ATGGGACTTT | TGCTGGCTTT | AGATCAGCCT | CGACTGTGCC | 4620       |            |      |
| 50 | TTCTAGTTGC | CAGCCATCTG | TTGTTTGCCC | CTCCCCCGTG | CCTTCCTTGA | CCCTGGAAGG | 4680       |            |      |
|    | TGCCACTCCC | ACTGTCCTTT | CCTAATAAAA | TGAGGAAATT | GCATCGCATT | GTCTGAGTAG | 4740       |            |      |
| 55 | GTGTCATTCT | ATTCTGGGGG | GTGGGGTGGG | GCAGGACAGC | AAGGGGGAGG | ATTGGGAAGA | 4800       |            |      |
|    | CAATAGCAGG | CATGCTGGGG | ATGCGGTGGG | CTCTATGGAA | CCAGCTGGGG | CTCGAGCTAC | 4860       |            |      |
|    | TAGCTTTGCT | TCTCAATTTT | TTATTTGCAT | AATGAGAAAA | AAAGGAAAAT | TAATTTTAAC | 4920       |            |      |
| 60 | ACCAATTCAG | TAGTTGATTG | AGCAAATGCG | TTGCCAAAAA | GGATGCTTTA | GAGACAGTGT | 4980       |            |      |
|    | TCTCTGCACA | GATAAGGACA | AACATTATTC | AGAGGGAGTA | CCCAGAGCTG | AGACTCCTAA | 5040       |            |      |

|    |            |            |             |            |            |            |      |
|----|------------|------------|-------------|------------|------------|------------|------|
|    | GCCAGTGAGT | GGCACAGCAT | TCTAGGGAGA  | AATATGCTTG | TCATCACCGA | AGCCTGATTC | 5100 |
|    | CGTAGAGCCA | CACCTTGGTA | AGGGCCAATC  | TGCTCACACA | GGATAGAGAG | GGCAGGAGCC | 5160 |
| 5  | AGGGCAGAGC | ATATAAGGTG | AGGTAGGATC  | AGTTGCTCCT | CACATTTGCT | TCTGACATAG | 5220 |
|    | TTGTGTTGGG | AGCTTGGATC | GATCCTCTAT  | GGTTGAACAA | GATGGATTGC | ACGCAGGTTT | 5280 |
| 10 | TCCGGCCGCT | TGGGTGGAGA | GGCTATTCGG  | CTATGACTGG | GCACAACAGA | CAATCGGCTG | 5340 |
|    | CTCTGATGCC | GCCGTGTTCC | GGCTGTCAGC  | GCAGGGGCGC | CCGGTTCCTT | TTGTCAAGAC | 5400 |
|    | CGACCTGTCC | GGTGCCCTGA | ATGAACTGCA  | GGACGAGGCA | GCGCGGCTAT | CGTGCGTGGC | 5460 |
| 15 | CACGACGGGC | GTTCTTTGCG | CAGCTGTGCT  | CGACGTTGTC | ACTGAAGCGG | GAAGGGACTG | 5520 |
|    | GCTGCTATTG | GGCGAAGTGC | CGGGGCAGGA  | TCTCCTGTCA | TCTCACCTTG | CTCCTGCCGA | 5580 |
| 20 | GAAAGTATCC | ATCATGGCTG | ATGCAATGCG  | GCGGCTGCAT | ACGCTTGATC | CGGCTACCTG | 5640 |
|    | CCCATTGAC  | CACCAAGCGA | AACATCGCAT  | CGAGCGAGCA | CGTACTCGGA | TGGAAGCCGG | 5700 |
|    | TCTTGTCGAT | CAGGATGATC | TGGACGAAGA  | GCATCAGGGG | CTCGCGCCAG | CCGAAGTGT  | 5760 |
| 25 | CGCCAGGCTC | AAGGCGCGCA | TGCCCCGACG  | CGAGGATCTC | GTCGTGACCC | ATGGCGATGC | 5820 |
|    | CTGCTTGCCG | AATATCATGG | TGGAAAATGG  | CCGCTTTTCT | GGATTCATCG | ACTGTGGCCG | 5880 |
| 30 | GCTGGGTGTG | GCGGACCGCT | ATCAGGACAT  | AGCGTTGGCT | ACCCGTGATA | TTGCTGAAGA | 5940 |
|    | GCTTGCGGCG | GAATGGGCTG | ACCGCTTCCT  | CGTGCTTTAC | GGTATCGCCG | CTCCCGATTC | 6000 |
|    | GCAGCGCATC | GCCTTCTATC | GCCTTCTTGA  | CGAGTTCTTC | TGAGCGGGAC | TCTGGGGTTC | 6060 |
| 35 | GAAATGACCG | ACCAAGCGAC | GCCCAACCTG  | CCATCACGAG | ATTCGATTC  | CACCGCCGCC | 6120 |
|    | TTCTATGAAA | GGTTGGGCTT | CGGAATCGTT  | TTCCGGGACG | CCGGCTGGAT | GATCCTCCAG | 6180 |
| 40 | CGCGGGGATC | TCATGCTGGA | GTTCTTTCGCC | CACCCCAACT | TGTTTATTGC | AGCTTATAAT | 6240 |
|    | GGTTACAAAT | AAAGCAATAG | CATCACAAAT  | TTCACAAATA | AAGCATTTTT | TTCAGTGCAT | 6300 |
|    | TCTAGTTGTG | GTTTGTCCAA | ACTCATCAAT  | CTATCTTATC | ATGTCTGGAT | CGCGGCCGCG | 6360 |
| 45 | ATCCCGTCGA | GAGCTTGCGG | TAATCATGGT  | CATAGCTGTT | TCCTGTGTGA | AATTGTTATC | 6420 |
|    | CGCTCACAAT | TCCACACAAC | ATACGAGCCG  | GAAGCATAAA | GTGTAAAGCC | TGGGGTGCCT | 6480 |
| 50 | AATGAGTGAG | CTAACTCACA | TTAATTGCGT  | TGCGCTCACT | GCCCCTTTTC | CAGTCGGGAA | 6540 |
|    | ACCTGTCTGT | CCAGCTGCAT | TAATGAATCG  | GCCAACGCGC | GGGGAGAGGC | GGTTTTCGTA | 6600 |
|    | TTGGGCGCTC | TTCCGCTTCC | TCGCTCACTG  | ACTCGCTGCG | CTCGGTCGTT | CGGCTGCGGC | 6660 |
| 55 | GAGCGGTATC | AGCTCACTCA | AAGGCGGTAA  | TACGGTTATC | CACAGAATCA | GGGGATAACG | 6720 |
|    | CAGGAAAGAA | CATGTGAGCA | AAAGGCCAGC  | AAAAGGCCAG | GAACCGTAAA | AAGGCCGCGT | 6780 |
| 60 | TGCTGGCGTT | TTTCCATAGG | CTCCGCCCCC  | CTGACGAGCA | TCACAAAAAT | CGACGCTCAA | 6840 |
|    | GTCAGAGGTG | GCGAAACCCG | ACAGGACTAT  | AAAGATACCA | GGCGTTTCCC | CCTGGAAGCT | 6900 |
|    | CCCTCGTGCG | CTCTCCTGTT | CCGACCCTGC  | CGTTTACCGG | ATACCTGTCC | GCCTTTCTCC | 6960 |

CTTCGGGAAG CGTGGCGCTT TCTCAATGCT CACGCTGTAG GTATCTCAGT TCGGTGTAGG 7020

5 TCGTTCGCTC CAAGCTGGGC TGTGTGCACG AACCCCCCGT TCAGCCCGAC CGCTGCGCCT 7080

TATCCGGTAA CTATCGTCTT GAGTCCAACC CGGTAAGACA CGACTTATCG CCACTGGCAG 7140

10 CAGCCACTCG TAACAGGATT AGCAGAGCGA GGTATGTAGG CGGTGCTACA GAGTTCTTGA 7200

AGTGGTGGCC TAACTACGGC TACACTAGAA GGACAGTATT TGGTATCTGC GCTCTGCTGA 7260

AGCCAGTTAC CTTCGGAAAA AGAGTTGGTA GCTCTTGATC CGGCAAACAA ACCACCGCTG 7320

15 GTAGCGGTGG TTTTGTGTT TGCAAGCAGC AGATTACGCG CAGAAAAAAA GGATCTCAAG 7380

AAGATCCTTT GATCTTTTCT ACGGGGCTG ACGCTCAGTG GAACGAAAAC TCACGTTAAG 7440

GGATTTTGGT CATGAGATTA TCAAAAAGGA TCTTCACCTA GATCCTTTTA AATTAAAAAT 7500

20 GAAGTTTAA ATCAATCTAA AGTATATATG AGTAACTTG GTCTGACAGT TACCAATGCT 7560

TAATCAGTGA GGCACCTATC TCAGCGATCT GTCTATTTCTG TTCATCCATA GTTGCCCTGAC 7620

25 TCCCCGTCGT GTAGATAACT ACGATACGGG AGGGCTTACC ATCTGGCCCC AGTGCTGCAA 7680

TGATACCGCG AGACCCACGC TCACCGGCTC CAGATTTATC AGCAATAAAC CAGCCAGCCG 7740

GAAGGGCCGA GCGCAGAAGT GGTCTTGCAA CTTTATCCGC CTCCATCCAG TCTATTAATT 7800

30 GTTGCCGGGA AGCTAGAGTA AGTAGTTCGC CAGTTAATAG TTTGCGCAAC GTTGTTGCCA 7860

TTGCTACAGG CATCGTGGTG TCACGCTCGT CGTTTGGTAT GGCTTCATTC AGCTCCGGTT 7920

35 CCCAACGATC AAGGCGAGTT ACATGATCCC CCATGTTGTG CAAAAAAGCG GTTAGCTCCT 7980

TCGGTCCTCC GATCGTTGTC AGAAGTAAGT TGGCCGCAGT GTTATCACTC ATGGTTATGG 8040

CAGCACTGCA TAATTCTCTT ACTGTCATGC CATCCGTAAG ATGCTTTTCT GTGACTGGTG 8100

40 AGTACTCAAC CAAGTCATTC TGAGAATAGT GTATGCGGCG ACCGAGTTGC TCTTGCCCGG 8160

CGTCAATACG GGATAATACC GCGCCACATA GCAGAACTTT AAAAGTGCTC ATCATTGGAA 8220

45 AACGTTCTTC GGGGCGAAAA CTCTCAAGGA TCTTACCGCT GTTGAGATCC AGTTCGATGT 8280

AACCCACTCG TGCACCCAAC TGATCTTCAG CATCTTTTAC TTTCAACAGC GTTCTGGGT 8340

GAGCAAAAAC AGGAAGGCAA AATGCCGCAA AAAAGGGAAT AAGGGCGACA CGGAAATGTT 8400

50 GAATACTCAT ACTCTTCCTT TTTCAATATT ATTGAAGCAT TTATCAGGGT TATTGTCTCA 8460

TGAGCGGATA CATATTTGAA TGTATTTAGA AAAATAAACA AATAGGGGTT CCGCGCACAT 8520

55 TTCCCCGAAA AGTGCCACCT 8540

(3) INFORMATION FOR SEQ ID NO: 2:

60 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9209 bases

(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: circular

- 5 (ii) MOLECULE TYPE: DNA (genomic)  
(iii) HYPOTHETICAL: yes  
(iv) ANTI-SENSE: no  
10 (ix) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

15 GACGTCGCGG CCGCTCTAGG CCTCCAAAAA AGCCTCCTCA CTACTTCTGG AATAGCTCAG 60  
AGGCCGAGGC GGCCTCGGCC TCTGCATAAA TAAAAAAAAT TAGTCAGCCA TGCATGGGGC 120  
GGAGAATGGG CGGAAGTGGG CGGAGTTAGG GCGGGGATGG GCGGAGTTAG GGGCGGGACT 180  
20 ATGGTTGCTG ACTAATTGAG ATGCATGCTT TGCATACTTC TGCCTGCTGG GGAGCCTGGG 240  
GACTTTCCAC ACCTGGTTGC TGAATAATTG AGATGCATGC TTTGCATACT TCTGCCTGCT 300  
GGGGAGCCTG GGGACTTTCC ACACCTAAC TGACACACAT TCCACAGAAT TAATTCCCCT 360  
25 AGTTATTAAT AGTAATCAAT TACGGGGTCA TTAGTTCATA GCCCATATAT GGAGTTCCGC 420  
GTTACATAAC TTACGGTAAA TGGCCCGCCT GGCTGACCGC CCAACGACCC CCGCCCATTG 480  
30 ACGTCAATAA TGACGTATGT TCCCATAGTA ACGCCAATAG GGAATTTCCA TTGACGTCAA 540  
TGGGTGGACT ATTTACGGTA AACTGCCCAC TTGGCAGTAC ATCAAGTGTA TCATATGCCA 600  
AGTACGCCCC CTATTGACGT CAATGACGGT AAATGGCCCG CCTGGCATTG TGCCAGTAC 660  
35 ATGACCTTAT GGGACTTTCC TACTTGGCAG TACATCTACG TATTAGTCAT CGCTATTACC 720  
ATGGTGATGC GGTTTTGGCA GTACATCAAT GGGCGTGGAT AGCGGTTTGA CTCACGGGGA 780  
40 TTTCCAAGTC TCCACCCCAT TGACGTCAAT GGGAGTTTGT TTTGGCACCA AAATCAACGG 840  
GACTTTCCAA AATGTCGTAA CAACTCCGCC CCATTGACGC AAATGGGCGG TAGGCGTGTA 900  
CGGTGGGAGG TCTATATAAG CAGAGCTGGG TACGTGAACC GTCAGATCGC CTGGAGACGC 960  
45 CATCACAGAT CTCTCACTAT GGATTTTCAG GTGCAGATTA TCAGCTTCCT GCTAATCAGT 1020  
GCTTCAGTCA TAATGTCCAG AGGACAAATT GTTCTCTCCC AGTCTCCAGC AATCCTGTCT 1080  
50 GCATCTCCAG GGGAGAAGGT CACAATGACT TGCAGGGCCA GCTCAAGTGT AAGTTACATC 1140  
CACTGGTTCC AGCAGAAGCC AGGATCCTCC CCCAAACCCT GGATTTATGC CACATCCAAC 1200  
CTGGCTTCTG GAGTCCCTGT TCGCTTCAGT GGCAGTGGGT CTGGGACTTC TTACTCTCTC 1260  
55 ACAATCAGCA GAGTGGAGGC TGAAGATGCT GCCACTTATT ACTGCCAGCA GTGGACTAGT 1320  
AACCACCCA CGTTCGGAGG GGGGACCAAG CTGGAATCA AACGTACGGT GGCTGCACCA 1380  
60 TCTGTCTTCA TCTTCCCGCC ATCTGATGAG CAGTTGAAAT CTGGAAGTGC CTCTGTTGTG 1440

TGCCTGCTGA ATAACCTCTA TCCCAGAGAG GCCAAAGTAC AGTGGAAGGT GGATAACGCC 1500  
 CTCCAATCGG GTAACCTCCA GGAGAGTGTC ACAGAGCAGG ACAGCAAGGA CAGCACCTAC 1560  
 5 AGCCTCAGCA GCACCCTGAC GCTGAGCAAA GCAGACTACG AGAAACACAA AGTCTACGCC 1620  
 TGCGAAGTCA CCCATCAGGG CCTGAGCTCG CCCGTCACAA AGAGCTTCAA CAGGGGAGAG 1680  
 10 TGTGAATTC AGATCCGTTA ACGGTTACCA ACTACCTAGA CTGGATTTCGT GACAACATGC 1740  
 GGCCGTGATA TCTACGTATG ATCAGCCTCG ACTGTGCCTT CTAGTTGCCA GCCATCTGTT 1800  
 GTTTGCCCCCT CCCCCGTGCC TTCCTTGACC CTGGAAGGTG CCACTCCCAC TGTCTTTTCC 1860  
 15 TAATAAAATG AGGAAATTGC ATCGCATTGT CTGAGTAGGT GTCATTCTAT TCTGGGGGGT 1920  
 GGGGTGGGGC AGGACAGCAA GGGGGAGGAT TGGGAAGACA ATAGCAGGCA TGCTGGGGAT 1980  
 GCGGTGGGCT CTATGGAACC AGCTGGGGCT CGACAGCTAT GCCAAGTACG CCCCCTATTG 2040  
 20 ACGTCAATGA CGGTAAATGG CCCGCTGGC ATTATGCCA GTACATGACC TTATGGGACT 2100  
 TTCCTACTTG GCAGTACATC TACGTATTAG TCATCGCTAT TACCATGGTG ATGCGGTTTT 2160  
 25 GGCAGTACAT CAATGGGCGT GGATAGCGGT TTGACTCACG GGGATTTCCA AGTCTCCACC 2220  
 CCATTGACGT CAATGGGAGT TTGTTTGGC ACCAAAATCA ACGGGACTTT CAAAATGTC 2280  
 GTAACAACTC CGCCCCATTG ACGCAAATGG GCGGTAGGCG TGTACGGTGG GAGGTCTATA 2340  
 30 TAAGCAGAGC TGGGTACGTC CTCACATTCA GTGATCAGCA CTGAACACAG ACCCGTCGAC 2400  
 ATGGGTTGGA GCCTCATCTT GCTCTTCCTT GTCGCTGTTG CTACGCGTGT CCTGTCCCAG 2460  
 35 GTACAACTGC AGCAGCCTGG GGCTGAGCTG GTGAAGCCTG GGGCCTCAGT GAAGATGTCC 2520  
 TGCAAGGCTT CTGGCTACAC ATTTACCAGT TACAATATGC ACTGGGTAAA ACAGACACCT 2580  
 GGTCCGGGCC TGGAATGGAT TGGAGCTATT TATCCCGGAA ATGGTGATAC TTCCTACAAT 2640  
 40 CAGAAGTTCA AAGGCAAGGC CACATTGACT GCAGACAAAT CCTCCAGCAC AGCCTACATG 2700  
 CAGCTCAGCA GCCTGACATC TGAGGACTCT GCGGTCTATT ACTGTGCAAG ATCGACTTAC 2760  
 45 TACGGCGGTG ACTGGTACTT CAATGTCTGG GGCGCAGGGA CCACGGTCAC CGTCTCTGCA 2820  
 GCTAGCACCA AGGGCCCATC GGTCTTCCCC CTGGCACCTT CCTCCAAGAG CACCTCTGGG 2880  
 GGCACAGCGG CCCTGGGCTG CCTGGTCAAG GACTACTTCC CCGAACCAGT GACGGTGTCG 2940  
 50 TGGAAGTCAG GCGCCCTGAC CAGCGGCGTG CACACCTTCC CGGCTGTCCT ACAGTCCTCA 3000  
 GGACTCTACT CCCTCAGCAG CGTGGTGACC GTGCCCTCCA GCAGCTTGGG CACCCAGACC 3060  
 55 TACATCTGCA ACGTGAATCA CAAGCCCAGC AACACCAAGG TGGACAAGAA AGCAGAGCCC 3120  
 AAATCTTGTG ACAAACCTCA CACATGCCCA CCGTGCCCAG CACCTGAACT CCTGGGGGGA 3180  
 CCGTCAGTCT TCCTCTTCCC CCCAAAACCC AAGGACACCC TCATGATCTC CCGGACCCCT 3240  
 60 GAGGTCACAT GCGTGGTGGT GGACGTGAGC CACGAAGACC CTGAGGTCAA GTTCAACTGG 3300  
 TACGTGGACG GCGTGGAGGT GCATAATGCC AAGACAAAGC CGCGGGAGGA GCAGTACAAC 3360



5 AGCACGTACC GTGTGGTCAG CGTCCTCACC GTCCTGCACC AGGACTGGCT GAATGGCAAG 3420  
 GAGTACAAGT GCAAGGTCTC CAACAAAGCC CTCCCAGCCC CCATCGAGAA AACCATCTCC 3480  
 AAAGCCAAAG GGCAGCCCCG AGAACCACAG GTGTACACCC TGCCCCATC CCGGGATGAG 3540  
 10 ~~CTGACGAAGA ACGAGGTCAQ CCTGACCTGC CTGATCAAAQ GCTTCTATCC CAGCCACATG~~ 3600  
 GCCGTGGAGT GGGAGAGCAA TGGGCAGCCG GAGAACAAC TACAAGACCAC GCCTCCCGTG 3660  
 CTGGACTCCG ACGGCTCCTT CTTCTCTTAC AGCAAGCTCA CCGTGGACAA GAGCAGGTGG 3720  
 15 CAGCAGGGGA ACGTCTTCTC ATGCTCCGTG ATGCATGAGG CTCTGCACAA CCACTACACG 3780  
 CAGAAGAGCC TCTCCCTGTC TCCGGGTAAA TGAGGATCCG TTAACGGTTA CCAACTACCT 3840  
 AGACTGGATT CGTGACAACA TGCGGCCGTG ATATCTACGT ATGATCAGCC TCGACTGTGC 3900  
 20 CTTCTAGTTG CCAGCCATCT GTTGTTTGCC CCTCCCCCGT GCCTTCCTTG ACCCTGGAAG 3960  
 GTGCCACTCC CACTGTCCTT TCCTAATAAA ATGAGGAAAT TGCATCGCAT TGTCTGAGTA 4020  
 25 GGTGTCATTC TATTCTGGGG GGTGGGGTGG GGCAGGACAG CAAGGGGGAG GATTGGGAAG 4080  
 ACAATAGCAG GCATGCTGGG GATGCGGTGG GCTCTATGGA ACCAGCTGGG GCTCGACAGC 4140  
 GCTGGATCTC CCGATCCCCA GCTTTGCTTC TCAATTTCTT ATTTGCATAA TGAGAAAAAA 4200  
 30 AGGAAAATTA ATTTTAACAC CAATTCAGTA GTTGATTGAG CAAATGCGTT GCCAAAAAGG 4260  
 ATGCTTTAGA GACAGTGTTT TCTGCACAGA TAAGGACAAA CATTATTGAG AGGGAGTACC 4320  
 35 CAGAGCTGAG ACTCCTAAGC CAGTGAGTGG CACAGCATTC TAGGGAGAAA TATGCTTGTC 4380  
 ATCACCGAAG CCTGATTCCG TAGAGCCACA CCTTGGTAAG GGCCAATCTG CTCACACAGG 4440  
 ATAGAGAGGG CAGGAGCCAG GGCAGAGCAT ATAAGGTGAG GTAGGATCAG TTGCTCCTCA 4500  
 40 CATTTGCTTC TGACATAGTT GTGTTGGGAG CTTGGATAGC TTGGACAGCT CAGGGCTGCG 4560  
 ATTCGCGCC AACTTGACG GCAATCCTAG CGTGAAGGCT GGTAGGATTT TATCCCCGCT 4620  
 45 GCCATCATGG TTCGACCATT GAACTGCATC GTCGCCGTGT CCCAAAATAT GGGGATTGGC 4680  
 AAGAACGGAG ACCTACCCTG GCCTCCGCTC AGGAACGAGT TCAAGTACTT CCAAAGAATG 4740  
 ACCACAACCT CTTCACTGGA AGGTAAACAG AATCTGGTGA TTATGGGTAG GAAAACCTGG 4800  
 50 TTCTCCATTC CTGAGAAGAA TCGACCTTTA AAGGACAGAA TTAATATAGT TCTCAGTAGA 4860  
 GAACTCAAAG AACCACCACG AGGAGCTCAT TTTCTTGCCA AAAGTTTGGG TGATGCCTTA 4920  
 55 AGACTTATTG AACAACCGGA ATTGGCAAGT AAAGTAGACA TGGTTTGGAT AGTCGGAGGC 4980  
 AGTTCTGTTT ACCAGGAAGC CATGAATCAA CCAGGCCACC TTAGACTCTT TGTGACAAGG 5040  
 ATCATGCAGG AATTTGAAAG TGACACGTTT TTCCAGAAA TTGATTTGGG GAAATATAAA 5100  
 60 CTTCTCCAG AATACCCAGG CGTCCTCTCT GAGGTCCAGG AGGAAAAAGG CATCAAGTAT 5160  
 AAGTTTGAAG TCTACGAGAA GAAAGACTAA CAGGAAGATG CTTTCAAGTT CTCTGCTCCC 5220

CTCCTAAAGC TATGCATTTT TATAAGACCA TGGGACTTTT GCTGGCTTTA GATCAGCCTC 5280  
 GACTGTGCCT TCTAGTTGCC AGCCATCTGT TGTTTGCCCC TCCCCGTGC CTTCTTGAC 5340  
 5 CCTGGAAGGT GCCACTCCCA CTGTCCTTTC CTAATAAAAT GAGGAAATTG CATCGCATTG 5400  
 TCTGAGTAGG TGTCACTTA TTCTGGGGGG TGGGGTGGGG CAGGACAGCA AGGGGGAGGA 5460  
 10 TTGGAAJAC AATAGCAGGC ATGCTGGGGA TGGGGTGGGC TCTATGGAAC CAGCTGGGGC 5520  
 TCGAGCTACT AGCTTTGCTT CTCAATTTCT TATTTGCATA ATGAGAAAAA AAGGAAAATT 5580  
 AATTTTAACA CCAATTCAGT AGTTGATTGA GCAAATGCGT TGCCAAAAAG GATGCTTTAG 5640  
 15 AGACAGTGT CTCTGCACAG ATAAGGACAA ACATTATTCA GAGGGAGTAC CCAGAGCTGA 5700  
 GACTCCTAAG CCAGTGAGTG GCACAGCATT CTAGGGAGAA ATATGCTTGT CATCACCAG 5760  
 GCCTGATTCC GTAGAGCCAC ACCTTGGTAA GGGCCAATCT GCTCACACAG GATAGAGAGG 5820  
 20 GCAGGAGCCA GGGCAGAGCA TATAAGGTGA GGTAGGATCA GTTGCTCCTC ACATTTGCTT 5880  
 CTGACATAGT TGTGTTGGGA GCTTGATCG ATCCTCTATG GTTGAACAAG ATGGATTGCA 5940  
 25 CGCAGGTTCT CCGGCCGCTT GGGTGGAGAG GCTATTCGGC TATGACTGGG CACAACAGAC 6000  
 AATCGGCTGC TCTGATGCCG CCGTGTTCCG GCTGTCAGCG CAGGGGCGCC CGGTTCTTTT 6060  
 TGTCAAGACC GACCTGTCCG GTGCCCTGAA TGAAGTGCAG GACGAGGCAG CGCGGCTATC 6120  
 30 GTGGCTGGCC ACGACGGGCG TTCCTTGCGC AGCTGTGCTC GACGTTGTCA CTGAAGCGGG 6180  
 AAGGGACTGG CTGCTATTGG GCGAAGTGCC GGGGAGGAT CTCCTGTCAT CTCACCTTGC 6240  
 35 TCCTGCCGAG AAAGTATCCA TCATGGCTGA TGCAATGCGG CGGCTGCATA CGCTTGATCC 6300  
 GGCTACCTGC CCATTCGACC ACCAAGCGAA ACATCGCATC GAGCGAGCAC GTACTCGGAT 6360  
 GGAAGCCGGT CTTGTCGATC AGGATGATCT GGACGAAGAG CATCAGGGGC TCGCGCCAGC 6420  
 40 CGAACTGTTC GCCAGGCTCA AGGCGCGCAT GCGGACGGC GAGGATCTCG TCGTGACCCA 6480  
 TGGCGATGCC TGCTTGCCGA ATATCATGGT GGAATGAGC CGCTTTTCTG GATTCATCGA 6540  
 45 CTGTGGCCGG CTGGGTGTGG CGGACCGCTA TCAGGACATA GCGTTGGCTA CCCGTGATAT 6600  
 TGCTGAAGAG CTTGGCGGCG AATGGGCTGA CCGCTTCCTC GTGCTTTACG GTATCGCCGC 6660  
 TCCCGATTTC CAGCGCATCG CCTTCTATCG CCTTCTTGAC GAGTCTTCT GAGCGGGACT 6720  
 50 CTGGGGTTTC AAATGACCGA CCAAGCGACG CCCAACCTGC CATCACGAGA TTTCGATTCC 6780  
 ACCGCCGCCT TCTATGAAAG GTTGGGCTTC GGAATCGTTT TCCGGGACGC CGGCTGGATG 6840  
 55 ATCCTCCAGC GCGGGGATCT CATGCTGGAG TTCTTCGCCC ACCCAAATT GTTTATTGCA 6900  
 GCTTATAATG GTTACAAATA AAGCAATAGC ATCACAAATT TCACAAATAA AGCATTTTTT 6960  
 TCACTGCATT CTAGTTGTGG TTTGTCCAAA CTCATCAATC TATCTTATCA TGTCTGGATC 7020  
 60 GCGGCCGCGA TCCCGTCGAG AGCTTGGCGT AATCATGGTC ATAGCTGTTT CCTGTGTGAA 7080  
 ATTGTTATCC GCTCACAATT CCACACAACA TACGAGCCGG AAGCATAAAG TGTAAGCCT 7140

|    |                                                                   |      |
|----|-------------------------------------------------------------------|------|
|    | GGGGTGCCTA ATGAGTGAGC TAACTCACAT TAATTGCGTT GCGCTCACTG CCCGCTTTCC | 7200 |
| 5  | AGTCGGGAAA CCTGTCGTGC CAGCTGCATT AATGAATCGG CCAACGCGCG GGGAGAGGCG | 7260 |
|    | GTTTGCGTAT TGGGCGCTCT TCCGCTTCCT CGCTCACTGA CTCGCTGCGC TCGGTCGTTC | 7320 |
|    | GGGTGCGGCG AGCGGTATCA GCTCACTCAA AGCGGTAAT ACGGTTATCC ACAGAAATCAG | 7380 |
| 10 | GGGATAACGC AGGAAAGAAC ATGTGAGCAA AAGGCCAGCA AAAGGCCAGG AACCGTAAAA | 7440 |
|    | AGGCCGCGTT GCTGGCGTTT TTCCATAGGC TCCGCCCCCC TGACGAGCAT CACAAAAATC | 7500 |
| 15 | GACGCTCAAG TCAGAGGTGG CGAAACCCGA CAGGACTATA AAGATACCAG GCGTTTCCCC | 7560 |
|    | CTGGAAGCTC CCTCGTGCGC TCTCCTGTTC CGACCCTGCC GCTTACCGGA TACCTGTCCG | 7620 |
|    | CCTTCTCCC TTCGGAAGC GTGGCGCTTT CTCAATGCTC ACGCTGTAGG TATCTCAGTT   | 7680 |
| 20 | CGGTGTAGGT CGTTCGCTCC AAGCTGGGCT GTGTGCACGA ACCCCCCGTT CAGCCCGACC | 7740 |
|    | GCTGCGCCTT ATCCGTAAC TATCGTCTTG AGTCCAACCC GGTAAGACAC GACTTATCGC  | 7800 |
| 25 | CACTGGCAGC AGCCACTGGT AACAGGATTA GCAGAGCGAG GTATGTAGGC GGTGCTACAG | 7860 |
|    | AGTTCTTGAA GTGGTGGCCT AACTACGGCT ACACTAGAAG GACAGTATTT GGTATCTGCG | 7920 |
|    | CTCTGCTGAA GCCAGTTACC TTCGGAAGAAA GAGTTGGTAG CTCTTGATCC GGCAACAAA | 7980 |
| 30 | CCACCGCTGG TAGCGGTGGT TTTTTGTGTT GCAAGCAGCA GATTACGCGC AGAAAAAAG  | 8040 |
|    | GATCTCAAGA AGATCCTTTG ATCTTTTCTA CGGGGTCTGA CGCTCAGTGG AACGAAAACT | 8100 |
| 35 | CACGTTAAGG GATTTTGGTC ATGAGATTAT CAAAAAGGAT CTTACCTAG ATCCTTTTAA  | 8160 |
|    | ATTAAAAATG AAGTTTAAA TCAATCTAAA GTATATATGA GTAAACTTGG TCTGACAGTT  | 8220 |
|    | ACCAATGCTT AATCAGTGAG GCACCTATCT CAGCGATCTG TCTATTTCTG TCATCCATAG | 8280 |
| 40 | TTGCCTGACT CCCCGTCGTG TAGATAACTA CGATACGGGA GGGCTTACCA TCTGGCCCCA | 8340 |
|    | GTGCTGCAAT GATACCGCGA GACCCACGCT CACCGGCTCC AGATTTATCA GCAATAAACC | 8400 |
| 45 | AGCCAGCCGG AAGGGCCGAG CGCAGAAGTG GTCCTGCAAC TTTATCCGCC TCCATCCAGT | 8460 |
|    | CTATTAATTG TTGCCGGGAA GCTAGAGTAA GTAGTTCGCC AGTTAATAGT TTGCGCAACG | 8520 |
|    | TTGTTGCCAT TGCTACAGGC ATCGTGGTGT CACGCTCGTC GTTTGGTATG GCTTCATTCA | 8580 |
| 50 | GCTCCGGTTC CCAACGATCA AGGCGAGTTA CATGATCCCC CATGTTGTGC AAAAAAGCGG | 8640 |
|    | TTAGCTCCTT CGGTCCTCCG ATCGTTGTCA GAAGTAAGTT GGCCGCAGTG TTATCACTCA | 8700 |
| 55 | TGGTTATGGC AGCACTGCAT AATTCTCTTA CTGTATGCC ATCCGTAAGA TGCTTTTCTG  | 8760 |
|    | TGACTGGTGA GACTCAACC AAGTCATTCT GAGAATAGTG TATGCGGCGA CCGAGTTGCT  | 8820 |
|    | CTTGCCCGGC GTCAATACGG GATAATACCG CGCCACATAG CAGAACTTTA AAAGTGCTCA | 8880 |
| 60 | TCATTGAAA ACGTTCTTCG GGGCGAAAAC TCTCAAGGAT CTTACCGCTG TTGAGATCCA  | 8940 |
|    | GTTTCGATGTA ACCCACTCGT GCACCCAAC TATCTTCAGC ATCTTTTACT TTCACCAGCG | 9000 |

TTTCTGGGTG AGCAAAAACA GGAAGGCAAA ATGCCGCAAA AAAGGGAATA AGGGCGACAC 9060  
 GGAAATGTTG AATACTCATA CTCTTCCTTT TTCAATATTA TTGAAGCATT TATCAGGGTT 9120  
 5 ATTGTCTCAT GAGCGGATAC ATATTTGAAT GTATTTAGAA AAATAACAA ATAGGGGTTT 9180  
 CGCGCACATT TCCCCGAAAA GTGCCACCT 9209

10 (4) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:

- 15 (A) LENGTH: 54 bases  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

20 (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: yes

(iv) ANTI-SENSE: no

25 (ix) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

5' ATC ACA GAT CTC TCA CCA TGG ATT TTC AGG TBC AGA TTA TCA GCT 52  
 TC 3' 2

30 (5) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:

- 35 (A) LENGTH: 30 bases  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

40 (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: yes

(iv) ANTI-SENSE: yes

45 (ix) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

50 5' TGC AGC ATC CGT ACG TTT GAT TTC CAG CTT 3' 30

(6) INFORMATION FOR SEQ ID NO: 5:

55 (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 384 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

5

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: yes

10 (iv) ANTI-SENSE: no

(ix) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

|    |                                                                     |     |
|----|---------------------------------------------------------------------|-----|
| 15 | ATG GAT TTT CAG GTG CAG ATT ATC AGC TTC CTG CTA ATC AGT GCT TCA GTC | 51  |
|    | ATA ATG TCC AGA GGG CAA ATT GTT CTC TCC CAG TCT CCA GCA ATC CTG TCT | 102 |
|    | GCA TCT CCA GGG GAG AAG GTC ACA ATG ACT TGC AGG GCC AGC TCA AGT GTA | 153 |
| 20 | AGT TAC ATC CAC TGG TTC CAG CAG AAG CCA GGA TCC TCC CCC AAA CCC TGG | 204 |
|    | ATT TAT GCC ACA TCC AAC CTG GCT TCT GGA GTC CCT GTT CGC TTC AGT GGC | 255 |
| 25 | AGT GGG TCT GGG ACT TCT TAC TCT CTC ACA ATC AGC AGA GTG GAG GCT GAA | 306 |
|    | GAT GCT GCC ACT TAT TAC TGC CAG CAG TGG ACT AGT AAC CCA CCC ACG TTC | 357 |
| 30 | GGA GGG GGG ACC AAG CTG GAA ATC AAA                                 | 384 |

(7) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:

35

- (A) LENGTH: 27 bases
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

40

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: yes

45 (iv) ANTI-SENSE: no

(ix) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

50

5' GCG GCT CCC ACG CGT GTC CTG TCC CAG 3'

27

(8) INFORMATION FOR SEQ ID NO: 7:

(i) SEQUENCE CHARACTERISTICS:

- 5 (A) LENGTH: 29 bases  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

10 (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: yes

(iv) ANTI-SENSE: yes

15

(ix) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

5' GGS TGT TGT GCT AGC TGM RGA GAC RGT GA 3' 29

20

(9) INFORMATION FOR SEQ ID NO: 8:

(i) SEQUENCE CHARACTERISTICS:

- 25 (A) LENGTH: 420 bases  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

30 (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: yes

(iv) ANTI-SENSE: no

35

(ix) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

40 ATG GGT TGG AGC CTC ATC TTG CTC TTC CTT GTC GCT GTT GCT ACG CGT GTC 51  
CTG TCC CAG GTA CAA CTG CAG CAG CCT GGG GCT GAG CTG GTG AAG CCT GGG 102  
GCC TCA GTG AAG ATG TCC TGC AAG GCT TCT GGC TAC ACA TTT ACC AGT TAC 153  
45 AAT ATG CAC TGG GTA AAA CAG ACA CCT GGT CGG GGC CTG GAA TGG ATT GGA 204  
GCT ATT TAT CCC GGA AAT GGT GAT ACT TCC TAC AAT CAG AAG TTC AAA GGC 255  
AAG GCC ACA TTG ACT GCA GAC AAA TCC TCC AGC ACA GCC TAC ATG CAG CTC 306  
50 AGC AGC CTG ACA TCT GAG GAC TCT GCG GTC TAT TAC TGT GCA AGA TCG ACT 357  
TAC TAC GGC GGT GAC TGG TAC TTC AAT GTC TGG GGC GCA GGG ACC ACG GTC 408  
ACC GTC TCT GCA 420